CLAIMS

1. An office component comprising:

an electrical conduit electrically coupled to a fuel cell; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

2. The invention of claim 1 wherein the fuel cell is remote to the office component.

3. The invention of claim 2 wherein the fuel cell is electrically coupled to a plurality of remote electrical conduits, and wherein the fuel cell is configured to provide electricity to a plurality of remote office components.

4. The invention of claim 1 wherein the fuel cell is attached to the office component.

5. The invention of claim 1 wherein the electrical conduit is electrically coupled to a plurality of remote fuel cells, and wherein the plurality of remote fuel cells is configured via a grid to provide electricity to a plurality of remote office components.

6. The invention of claim 1 wherein the office component is selected from the group consisting of a chair, a support column, a support beam, a workstation, a wall panel, a bookcase, a bookshelf, a computer docking station, a telephone switchboard, and combinations thereof.

7. The invention of claim 1 wherein the electrically powered device is selected from the group consisting of an automatic adjustment mechanism, a control system, a sound masking system, an office accessory, and combinations thereof.

8. The invention of claim 7 wherein the office component is a chair comprising a base, and a seat supported by the base.

9. The invention of claim 8 wherein the automatic adjustment mechanism regulates chair height.

10. A seating structure comprising:

a base;

a seat supported by the base;

an electrical conduit electrically coupled to a power source; and

an automatic height adjustment mechanism coupled to the electrical conduit and configured to receive electricity from the power source, wherein the automatic height adjustment mechanism comprises:

an actuator;

a gear rotatably connected to the actuator, wherein the gear rotates a height-adjustable shaft connecting the seat to the base of the chair;

a microprocessor electrically coupled to the actuator; and

a load sensor electrically coupled to the microprocessor, wherein the load sensor provides a signal to the microprocessor indicative of whether the height of the chair should be increased, decreased, or held constant.

11. The invention of claim 10 wherein the power source is remote to the office component.

12. The invention of claim 10 wherein the power source is attached to the office component.

13. The invention of claim 10 wherein the power source is selected from the group consisting of a battery and a fuel cell.

14. The invention of claim 10 wherein the power source comprises a fuel cell.

15. The invention of claim 10 further comprising a rotatably adjustable nut on the shaft, wherein the gear meshes with and rotates the rotatably adjustable nut.

16. The invention of claim 8 wherein the automatic adjustment mechanism regulates chair tilt.

17. A seating structure comprising:

a base;

a seat supported by the base;

an electrical conduit electrically coupled to a power source; and

an automatic tilt adjustment mechanism coupled to the electrical conduit and configured to receive electricity from the power source, wherein the automatic tilt adjustment mechanism comprises:

an actuator;

a biasing member mechanically coupled to the actuator, wherein the biasing member biases the seat;

a microprocessor electrically coupled to the actuator; and

a load sensor electrically coupled to the microprocessor; wherein

the load sensor detects a weight on the seat;

the microprocessor calculates a target biasing force for the biasing member based on the weight detected by the load sensor; and

the actuator adjusts the biasing member to achieve the target biasing force.

18. The invention of claim 17 further comprising a backrest connected to at least one of the seat and the base, wherein the biasing member biases at least one of the seat and the backrest.

19. The invention of claim 17 wherein the power source is remote to the office component.

20. The invention of claim 17 wherein the power source is attached to the office component.

21. The invention of claim 17 wherein the power source is selected from the group consisting of a battery and a fuel cell.

22. The invention of claim 17 wherein the power source comprises a fuel cell.

23. The invention of claim 17 wherein the biasing member comprises a spring.

24. The invention of claim 23 further comprising an actuating member, wherein the actuating member is mechanically coupled to each of the actuator and the spring.

25. The invention of claim 24 wherein the spring comprises a torsion spring.

26. The invention of claim 25 wherein the actuating member comprises a torque lever.

27. The invention of claim 25 wherein the torsion spring comprises an elastomeric spring or a coil spring.

28. The invention of claim 24 wherein the spring comprises a leaf spring.

29. The invention of claim 28 wherein the actuating member comprises a fulcrum member.

30. The invention of claim 24 wherein the spring comprises a tension spring.

31. The invention of claim 24 wherein the spring comprises a compression spring.

32. The invention of claim 17 further comprising a transducer electrically coupled to the microprocessor, wherein the transducer senses at least one of positioning and biasing force of the biasing member, and signals the microprocessor when the target biasing force is achieved.

33. The invention of claim 32 wherein the transducer comprises a translational position transducer.

34. The invention of claim 32 wherein the transducer comprises a rotational position transducer.

35. The invention of claim 24 further comprising a transducer electrically coupled to the microprocessor, wherein the transducer senses at least one of positioning and biasing force of the actuating member, and signals the microprocessor when the target biasing force is achieved

36. The invention of claim 35 wherein the transducer comprises a translational position transducer.

37. The invention of claim 35 wherein the transducer comprises a rotational position transducer.

38. A seating structure comprising:

a base;

a seat supported by the base;

an electrical conduit electrically coupled to a power source; and

an automatic tilt adjustment mechanism coupled to the electrical conduit and configured to receive electricity from the power source, wherein the automatic tilt adjustment mechanism comprises:

an actuator;

a biasing member mechanically coupled to the actuator, wherein the biasing member biases the seat;

a microprocessor electrically coupled to the actuator; and

a transducer electrically coupled to the microprocessor; wherein

the transducer detects an angle of inclination of the seat; and

the actuator adjusts the biasing member to achieve a default position for the seat.

39. The invention of claim 38 further comprising a backrest connected to at least one of the seat and the base, wherein the biasing member biases at least one of the seat and the backrest, the transducer detects at least one of the angle of inclination of the seat and an angle of inclination of the backrest, and the actuator adjusts the biasing member to achieve a default position for at least one of the seat and the backrest.

40. The invention of claim 38 wherein the power source is selected from the group consisting of a battery and a fuel cell.

41. The invention of claim 40 wherein the power source comprises a fuel cell.

42. The invention of claim 38 wherein the biasing member comprises a spring.

43. The invention of claim 39 wherein the actuator adjusts the biasing member to achieve at least one of the default position of the seat and the default position of the backrest upon detecting a user sitting in the chair.

44. The invention of claim 39 wherein the actuator adjusts the biasing member to achieve at least one of the default position of the seat and the default position of the backrest upon detecting a user rising from the chair.

45. A seating structure comprising:

a base and a seat supported by the base;

an electrical conduit electrically coupled to a power source; and

an automatic tilt adjustment mechanism coupled to the electrical conduit and configured to receive electricity from the power source, wherein the automatic tilt adjustment mechanism comprises:

a motor;

a spring coupled to the motor, wherein the spring biases the seat;

a microprocessor electrically coupled to the motor; and

a transducer electrically coupled to the microprocessor; wherein

the transducer detects an angle of inclination of the seat; and

the motor adjusts torque of the spring to achieve a default position for the seat.

46. The invention of claim 45 further comprising a backrest connected to at least one of the seat and the base, wherein the spring biases at least one of the seat and the backrest, the transducer detects at least one of the angle of inclination of the seat and an angle of inclination of the backrest, and the motor adjusts torque of the spring to achieve a default position for at least one of the seat and the backrest.

47. The invention of claim 7 further comprising a microprocessor electrically coupled to the electrically powered device.

48. The invention of claim 47 further comprising a memory device electrically coupled to the microprocessor.

49. The invention of claim 48 wherein the electrically powered device comprises a control system.

50. The invention of claim 49 wherein the control system comprises a digital display.

51. The invention of claim 50 wherein the office component comprises a chair.

52. The invention of claim 50 wherein the digital display is touch sensitive, and wherein data touch-entered at the digital display is conveyed to the microprocessor.

53. The invention of claim 52 wherein the office component comprises a chair.

54. The invention of claim 50 wherein the digital display is electrically coupled to at least one of a keyboard and a keypad, and wherein

data type-entered at the keyboard or keypad is conveyed to the microprocessor.

55. The invention of claim 54 wherein the office component comprises a chair.

56. The invention of claim 50 wherein the digital display comprises a user interface selected from the group consisting of a touch screen, a keyboard, a keypad, a voice recognition system, switches, sensors, and combinations thereof, whereby a user can adjust office component settings.

57. The invention of claim 56 wherein the office component comprises a chair, and wherein the office component settings are selected from the group consisting of chair tilt, chair height, seat depth, armrest height, lumbar pressure, lumbar position, and combinations thereof.

58. The invention of claim 50 wherein the control system comprises an encoded device reader, and wherein the encoded device reader reads personalized office component settings stored on an encoded device.

59. The invention of claim 58 wherein the office component comprises a chair.

60. The invention of claim 58 wherein the control system further comprises an encoded device writer, and wherein the encoded device writer saves personalized office component settings onto an encoded device.

61. The invention of claim 60 wherein the office component comprises a chair.

62. The invention of claim 60 wherein the control system further comprises a digital display.

63. The invention of claim 62 wherein the office component comprises a chair.

64. The invention of claim 47 wherein the electrically powered device comprises a sound masking system.

65. The invention of claim 64 wherein the office component comprises a chair.

66. The invention of claim 56 wherein the electrically powered device further comprises a sound masking system, and wherein the office component settings comprise sound masking system output.

67. An office component comprising:

an electrical conduit electrically coupled to a fuel cell; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell; wherein the fuel cell is selected from the group consisting of a polymer electrolyte membrane fuel cell, a direct methanol fuel cell, an alkaline fuel cell, a phosphoric acid fuel cell, a molten carbonate fuel cell, a solid oxide fuel cell, and combinations thereof.

68. An office component comprising:

a fuel cell;

an electrical conduit electrically coupled to the fuel cell; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell; wherein the fuel cell is selected from the group consisting of a polymer electrolyte membrane fuel cell, a direct methanol fuel cell, an alkaline fuel cell, a phosphoric acid fuel cell, a molten carbonate fuel cell, a solid oxide fuel cell, and combinations thereof.

69. The invention of claim 67 wherein the fuel cell is selected from the group consisting of a polymer electrolyte membrane fuel cell and a direct methanol fuel cell.

70. The invention of claim 68 wherein the fuel cell is selected from the group consisting of a polymer electrolyte membrane fuel cell and a direct methanol fuel cell.

71. An office component comprising:
an electrical conduit electrically coupled to a fuel cell;
a power capacitor electrically coupled to the fuel cell; and
an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

72. The invention of claim 71 further comprising a control member electrically coupled to the fuel cell, wherein the control member activates the fuel cell when a minimum power level set point of the power capacitor is reached, and deactivates the fuel cell when a maximum power level set point of the power capacitor is reached.

73. An office component comprising:
a fuel cell;
an electrical conduit electrically coupled to the fuel cell;
a power capacitor electrically coupled to the fuel cell; and
an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

74. The invention of claim 73 further comprising a control member electrically coupled to the fuel cell, wherein the control member activates the fuel cell when a minimum power level set point of the power capacitor is

reached, and deactivates the fuel cell when a maximum power level set point of the power capacitor is reached.

75. The invention of claim 4 wherein the office component further comprises a fuel tank connected to the fuel cell.

76. The invention of claim 4 wherein the office component further comprises a water reservoir connected to a water outlet of the fuel cell.

77. The invention of claim 4 wherein the office component further comprises a vaporizer connected to a water outlet of the fuel cell, wherein the vaporizer is configured to expel water produced by the fuel cell as humidity.

78. The invention of claim 7 wherein the office accessory is selected from the group consisting of a climate control system, a lighting system, a computer, a telecommunication system, a relaxation stimulation system, a biofeedback system, a PDA and combinations thereof.

79. A seating structure comprising:

a base and a seat supported by the base;

a microprocessor;

an automatic tilt adjustment mechanism electrically coupled to the microprocessor;

a digital display electrically coupled to the microprocessor;

an encoded device reader electrically coupled to the microprocessor; and

an encoded device writer electrically coupled to the microprocessor.

80. The invention of claim 79 further comprising a backrest connected to at least one of the seat and the base.

81. The invention of claim 79 further comprising a fuel cell electrically coupled to the microprocessor.

82. The invention of claim 79 further comprising an automatic height adjustment mechanism electrically coupled to the microprocessor.

83. The invention of claim 82 further comprising a fuel cell electrically coupled to the microprocessor.

84. The invention of claim 82 wherein the automatic height adjustment mechanism comprises:

a first motor electrically coupled to the microprocessor;

a gear rotatably connected to the motor, wherein the gear meshes with and rotates a rotatably adjustable nut, and wherein the rotatably adjustable nut is on a height-adjustable shaft connecting the seat to the base of the chair; and

a load sensor electrically coupled to the microprocessor, wherein the load sensor detects degree to which a load on the seat is alleviated.

85. The invention of claim 84 further comprising a backrest connected to at least one of the seat and the base, wherein the automatic tilt adjustment mechanism comprises:

a second motor electrically coupled to the microprocessor;

a biasing member connected to the second motor, wherein the biasing member adjusts biasing force against at least one of the seat and the backrest;

a load sensor electrically coupled to the microprocessor; and

a position transducer electrically coupled to the microprocessor; wherein

the load sensor detects a weight on the seat;

the microprocessor calculates an optimum target position for the biasing member based on the weight detected by the load sensor;

the second motor adjusts the biasing member to achieve the optimum target position; and

the position transducer senses positioning of the biasing member, and signals the microprocessor when the optimum target position is achieved.

86. The invention of claim 85 further comprising a fuel cell, which is electrically coupled to the microprocessor.

87. The invention of claim 85 wherein the digital display comprises a user interface selected from the group consisting of a touch screen, a keyboard, a keypad, a voice recognition system, and combinations thereof, whereby a user can adjust office component settings.

88. The invention of claim 85 further comprising a memory device electrically coupled to the microprocessor

89. The invention of claim 88 further comprising a sound masking system electrically coupled to the microprocessor.

90. A seating structure comprising:

a base and a seat supported by the base;

a microprocessor;

means for automatic tilt adjustment electrically coupled to the microprocessor;

means for visual display electrically coupled to the microprocessor;

means for reading stored information electrically coupled to the microprocessor; and

means for storing information electrically coupled to the microprocessor.

91. The invention of claim 90 further comprising a backrest connected to at least one of the seat and the base.

92. The invention of claim 90 further comprising a fuel cell electrically coupled to the microprocessor.

93. The invention of claim 90 further comprising means for automatic height adjustment electrically coupled to the microprocessor;

94. The invention of claim 93 further comprising a fuel cell electrically coupled to the microprocessor.

95. The invention of claim 90 wherein the means for visual display comprise a user interface selected from the group consisting of a touch screen, a keyboard, a keypad, a voice recognition system, switches, sensors, and combinations thereof, whereby a user can adjust office component settings.

96. The invention of claim 95 further comprising means for sound masking electrically coupled to the microprocessor.

97. A seating structure comprising:
a base;
a seat supported by the base;
a backrest connected to the seat; and
an adjustment mechanism; wherein
the seat and the backrest comprise a membrane; and
the adjustment mechanism comprises:
a motor;

a torsion spring coupled to the motor, wherein the torsion spring biases at least one of the seat and the backrest; and

a control system coupled to the motor, whereby the motor can be operated in at least one of a forward and a reverse direction, and whereby torque applied to the torsion spring can be adjusted.

98. The invention of claim 97 wherein the adjustment mechanism further comprises an arm member extending radially outwardly from the torsion spring, wherein the arm member is coupled to the motor.

99. A method of using a seating structure comprising:

storing personalized seating structure settings on an encoded device; and

reading the personalized seating structure settings using an electrically powered control system connected to the seating structure, wherein the electrically powered control system is configured to receive electricity generated by a fuel cell.

100. The invention of claim 99 further comprising automatically adjusting the seating structure to achieve the personalized seating structure settings.

101. The invention of claim 99 wherein the electrically powered control system comprises a digital display, and the digital display comprises a user interface selected from the group consisting of a touch screen, a keyboard, a keypad, a voice recognition system, and combinations thereof, whereby a user of the seating structure can manually adjust the chair.

102. The invention of claim 99 further comprising storing a plurality of personalized seating structure settings on the encoded device.

103. The invention of claim 99 further comprising automatically adjusting a plurality of seating structures to achieve a plurality of personalized seating structure settings, wherein each of the plurality of personalized seating structure settings is the same or different.

104. A method of using a seating structure comprising:

storing personalized seating structure settings on an encoded device, wherein the personalized seating structure settings comprise a seating structure tilt setting;

reading the personalized seating structure settings using an electrically powered control system connected to the seating structure; and

automatically adjusting seating structure tilt.

105. The invention of claim 104 wherein the electrically powered device is configured to receive electricity generated by a fuel cell.

106. The invention of claim 104 wherein the personalized seating structure settings further comprise a seating structure height setting.

107. The invention of claim 106 further comprising automatically adjusting seating structure height.

108. The invention of claim 107 wherein the electrically powered device is configured to receive electricity generated by a fuel cell.

109. A system of seating structures comprising:

a plurality of seating structures, wherein each component seating structure of the plurality comprises:

a microprocessor electrically coupled to a fuel cell;

an encoded device reader electrically coupled to the microprocessor; and

an encoded device writer electrically coupled to the microprocessor.

110. The invention of claim 109 wherein the fuel cell is remote to the component chair.

111. The invention of claim 109 wherein the fuel cell is connected to the component seating structure.

112. The invention of claim 109 wherein at least one of the component seating structures is automatically adjusted to achieve one or more personalized seating structure settings stored on an encoded device.

113. The invention of claim 112 wherein the personalized seating structure settings comprise a seating structure tilt setting.

114. The invention of claim 112 wherein the personalized seating structure settings comprise a seating structure height setting.

115. An office component comprising:

an electrical conduit electrically coupled to a fuel cell;

an inverter coupled to the fuel cell;

an electrical outlet coupled to the inverter; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

116. The invention of claim 115 wherein the office component is a chair.

117. An office component comprising:

a fuel cell;

an electrical conduit electrically coupled to the fuel cell;

an inverter coupled to the fuel cell;

an electrical outlet coupled to the inverter; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

118. The invention of claim 117 wherein the office component is a chair.

119. An office component comprising:

an electrical conduit electrically coupled to a fuel cell;

a power capacitor electrically coupled to the fuel cell;

an inverter coupled to the power capacitor;

an electrical outlet coupled to the inverter; and

an electrically powered device coupled to the electrical conduit and configured to receive electricity generated by the fuel cell.

120. The invention of claim 119 further comprising a control member electrically coupled to the fuel cell, wherein the control member activates the fuel cell when a minimum power level set point of the power capacitor is reached, and deactivates the fuel cell when a maximum power level set point of the power capacitor is reached.

121. The invention of claim 119 wherein the office component is a chair.